



Photo: Ingo Wagner, Bremen



Photo: Martina Buchholz

*"Hartelijk welkom", the Dutch royal couple visited the Fraunhofer IWES.*

## King and Queen of the Netherlands visit Fraunhofer IWES

On March 6, King Willem-Alexander and Queen Máxima were the guests of honor at IWES' rotor blade test rig. Prof. Andreas Reuter and chief scientist Dr. Arno van Wingerde explained the economic benefits

of accelerated certification and rotor blade design validation. The ceremony was also attended by the German Dutch Offshore Wind Days, an event organized by the NNOW.

## Lidar Measurements on Car Ferry Help to Determine Wind Resources

The Kiel-Klaipeda car ferry had a 'stowaway' on board for a few months in the form of a highly precise wind lidar device designed to measure wind conditions at heights of up to 200 m. With this, Fraunhofer IWES is taking a whole new approach to the cost-effective acquisition of offshore wind measurement data. Such data is required to validate the calculations from meteorological models and, on the basis of this, to improve the models.

This measurement method was part of the European "New European Wind Atlas" project (NEWA) and is currently being used in a benchmark study to validate various meteorological models. In future, model calculations for the wind resources of offshore wind farms could be validated cost-effectively using wind lidar measurements taken on regularly scheduled ships.  
[julia.gottschall@iwes.fraunhofer.de](mailto:julia.gottschall@iwes.fraunhofer.de)

Dear Readers,  
Over the last 10 years and in large part due to the IWES, Bremerhaven and Bremen have become highly renown as a centre of excellence for applied research and the offshore wind industry.

The work of the IWES has been well received by the business sector and the science community and many business and industry co-operations have been established. This is recognized as an important contribution to regional/national economic development bringing significant economic benefits and new employment opportunities to the region and beyond.

I am convinced that offshore wind energy will make a substantial contribution towards reaching EU's emission reduction goals while also ensuring the German energy transition. Offshore wind is an extremely reliable form of energy and well accepted among the public, especially compared to onshore wind generation.

Therefore, an important purpose of our regional policy is to further advance the development of offshore wind energy and to ensure the implementation of the necessary infrastructure and port facilities.

Bremerhaven and Bremen still have a lot to offer as locations for this important industry. The IWES is a key player in mobilizing all potentials for offshore wind. Its expertise will also help accelerate the development of innovative solutions, such as for storage of the energy produced offshore.

I am convinced that within the next 10 years, the IWES, Bremerhaven and Bremen will have significantly benefitted from the further development of the offshore wind energy sector.

Kind regards,

**Martin Günthner**  
Minister of Economic Affairs,  
Labour and Ports of the German Federal  
State of Bremen

## Leading Edge Lab: Upgrade of Test Capabilities



Photo: Martina Buchholz

Test bench for rain erosion

In order to satisfy the wind industry's demand for extensive validation of leading-edge protection systems, Fraunhofer IWES has upgraded its test bench for rain erosion, resulting in a drastic increase in sample throughput and a significant reduction in test costs. These efficiencies also enable the scientists to tackle their ambitious test campaign, which is scheduled within the scope of the BeLeB project. The main goal of this project is to study the influence of environmental conditions on leading edge protection and to gain a better understanding of damage mechanisms. The results will be implemented in a damage model to predict the evolution of rain erosion on turbine blades. The next upgrade is already scheduled: an automatic inspection will further increase both the efficiency of the test and the quality of collected data.

[steffen.czichon@iwes.fraunhofer.de](mailto:steffen.czichon@iwes.fraunhofer.de)



Photo: Jan Meier

Comparison with different coatings after the erosion test.

### EDITORIAL NOTE

Publisher: Fraunhofer Institute for Wind Energy Systems IWES, Am Seedeich 45 · 27572 Bremerhaven · Germany · [www.iwes.fraunhofer.de](http://www.iwes.fraunhofer.de)

VAT Identification Number in accordance with §27 a, VAT Tax Act: DE 129515865

Editor in charge: Inna Eck, Bernhard Lange

Fraunhofer Institute for Wind Energy Systems IWES is a constituent entity of the Fraunhofer-Gesellschaft and as such has no separate legal status. Hansastraße 27 c · 80686 München

Acknowledgement:



## Reliable Measurement Data from the Monitoring Buoy



Photo: Fraunhofer IWES

Lidar measuring buoy at harbor basin

Environmental monitoring at sea is becoming increasingly important, and not just because of the offshore wind industry. Reliable measurement data is also required, for example, for environmental and climate protection. What is still done today by large lightships will soon be handled by the monitoring buoy (MoBo) which has been developed by Fraunhofer IWES together with the Federal Maritime and Hydrographic Agency (BSH). The beating heart of the MoBo is a stormproof Fraunhofer IWES wind lidar buoy with a laser-based wind measurement which has been enhanced to include various oceanographic parameters. In addition to currents and waves, the salinity, pH value, and temperatures at various water depths are measured. The prototype is currently undergoing testing in Bremerhaven's harbor basin. [erik.patschke@iwes.fraunhofer.de](mailto:erik.patschke@iwes.fraunhofer.de)

## Acquisition of Next-Gen High-Resolution Seismics

At the turn of the year, Fraunhofer IWES, in cooperation with the University of Bremen, acquired the first full-field 3D high-resolution seismic data set for a wind farm area in German waters. This campaign marks the beginning of a new way of thinking in the offshore wind farm industry: moving from the assessment of single locations to field-wide subsurface characterization, companies are ideally prepared to cope with late changes in the wind farm layout and design. The Fraunhofer IWES 3D Multichannel Seismic System (MCS) includes four 50-m streamers with 1-m spacing between single hydrophones. This system, which was designed specially for Fraunhofer IWES, is not only optimally designed to record high-frequency seismic signals, but also allows to acquire data at shallow water depths (< 50 m) with superior lateral and horizontal resolution. [benedict.preu@iwes.fraunhofer.de](mailto:benedict.preu@iwes.fraunhofer.de)

Fraunhofer IWES is DIN EN ISO9001-certified in the following areas:

- Product Development up to Prototype
- Technology Development and Optimization
- Assessment of Technologies and Studies
- Evaluation in Test Centers

